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ABSTRACT

Evaluation data are presented for the Open Door infant, toddler, and preschool programs (Las Cruces, New Mexico) for handicapped young children. Effects of intervention are reported in terms of learner gain for each child, mean gains for each child across developmental areas, mean gains for groups within each developmental area, subsequent placements for graduates for the preschool programs, and financial costs in relation to regular and special education public school programs and institutionalization. Findings are said to include that graduates were remaining in local public school programs, and that the costs compared favorably to those reported in recent literature. (CL)

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Intervention Efficiency, Subsequent Placements, and Cost Effectiveness of Two Preschool Programs for Handicapped Children

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Intervention Efficiency, Subsequent Placements, and Cost Effectiveness of Two Preschool Programs for Handicapped Children

Early educational intervention (i.e., special education and related services) with 0-5 year old handicapped children has been justified from at least the following five points-of-view (Stile & Stile, 1979):

1. Prevention of failure during subsequent school years. Data obtained in the First Chance Network Projects (Jordan, Hayden, Karnes, and Wood, 1977) and Head Start programs (Haring, 1978) indicate that "graduates" of early education programs for the handicapped tend to require less intensive special education and related services during subsequent school years.

2. Parent programming. It is a "given" (Jordan, et al., 1977) that parents/families are also served in programs for young handicapped children. Parents are recipients of a variety of training programs including those stressing direct instructional techniques (Stile and Atkinson, 1976) and advocacy. In addition, parents are given the opportunity to "ventilate" and respite care is provided.

3. Learning. From a learning perspective, children have obtained 80 percent of their total adult intellectual capacity by eight years of age (Roos, 1974). Other arguments supporting early education of handicapped children from a learning point-of-view are that (a) learning is more rapid and facile in early years, (b) it is easier to learn a new behavior than to stamp out one set and replace it with another, and (c) the earlier a child starts school, the more skills he or she will have upon leaving school.

4. Social change. Associated with a growing number of teen-aged mothers is a growing number of "high risk" births (Forbes, 1958). Additionally, medical advances have made possible the survival of an increasingly high proportion of premature infants for whom the risk of

central nervous system disorders and visual handicaps is great (Meier, 1973).

5. Educational economics. Early education of handicapped children is also supported from an economics point-of-view (Smith, 1981). As Frohreich (1972) has described it, special education is more expensive than the regular variety due to (among other reasons) the necessity for a better teacher/student ratio. Thus, if the need for special education and related services is minimized through early intervention, "excess costs" may be reduced significantly.

The Open Door Programs

The Open Door infant, toddler, and preschool programs are housed in the College of Education at New Mexico State University in Las Cruces and serve handicapped children ages 0-5. The infant (4 children ages 0-18 months) and toddler (8 children ages 18 months to 3 years) programs act as a replication site for the Wyoming Infant Stimulation Project (WISP) located in Laramie, Wyoming (University of Wyoming). The preschool program (10 children ages 3 to 5 years) serves as a replication site for the Precise Early Education for Children with Handicaps (PEECH) program which is located at the University of Illinois, Champaign-Urbana. Taken together, these programs provide (a) demonstration/replication services (e.g., inservice training) to interested individuals and (b) direct services to handicapped young children and their families. Evaluation data described in this paper were gathered from the WISP and PEECH programs with assistance from Open Door classroom personnel and administrators.

Purpose of Paper and Evaluation Questions

The three-pronged purpose of the evaluation effort described in the present paper was to examine (a) efficiency of intervention, (b) subsequent placements of "graduates," and (c) costs of the program in relation to regular and special education public school programs and institutionalization. As Safford (1978)

has suggested, such evaluation efforts are essential because (a) they allow educators to modify programs and to develop individualized procedures most beneficial to each child, and (b) it is a "moral imperative" to provide feedback to society and families served in view of their investments of funds, time, effort, and hope. Specifically, the following five evaluation questions were addressed:

1. What were the effects of intervention in terms of gains for each child within selected developmental areas as measured by the Efficiency Index?

2. What were the effects of intervention in terms of mean gains for each child across developmental areas as measured by the Efficiency Index?

3. What were the effects of intervention in terms of mean gains for groups within each developmental area as measured by the Efficiency Index?

4. What were the subsequent placements for "graduates" of the preschool programs?

5. What were the financial costs of the programs in relation to regular and special education public school programs and institutionalization?

Methods

The Efficiency Index (Simeonsson & Wiegerink, 1975; Simeonsson, 1982) was employed in the present evaluation effort to address evaluation questions 1, 2, and 3. As Simeonsson and Wiegerink (1975) have described it, the concept of efficiency in relation to programs for handicapped children can best be thought of "as the greatest amount of developmental change which can occur in children given a certain program and time" (p.479). In Simeonsson's words:

> The efficiency index qualifies rate of progress as a function of the developmental status of individual handicapped children. This qualification [is] felt to be necessary to reflect the fact that progress made by children should be considered relative to their level of handicap and ability. (p.358)

Thus described, the efficiency index is expressed as follows:

$$\text{Efficiency Index} = \frac{\text{Actual gain}}{\text{Ideal gain}} \cdot \text{Developmental Status}$$

Evaluation questions 4 and 5 were addressed via interviews with appropriate administrators (e.g., for purposes of determing costs of programs).

Results

Evaluation question No. 1. Table 1 presents the results for evaluation question 1. Results are presented for 2 selected areas of development per program for purposes of brevity. Other curricular areas include gross motor, adaptive reasoning, expressive language, feeding, dressing, and hygiene.

Insert Table 1 about here

Evaluation question No.2. The results for evaluation question 2 are presented in Table 2. The efficiency indexes in column 4 represent the mean gain for each child across all developmental areas. Note that the number of developmental areas differs from program to program (column 3).

Insert Table 2 about here

Evaluation question No. 3. Table 3 presents data relative to group mean gains for all areas of development addressed in the Open Door programs. Efficiency indexes are reported in column 4.

Insert Table 3 about here

Evaluation question No. 4. Figure 1 graphically describes New Mexico's ABCD special education placement continuum. Based upon diagnostic data, children are recommended for placement in special education at 1 of 4 levels (e.g., Level D is a self-contained special education placement with a 1:6-8 teacher-student ratio; Level A is a regular classroom placement with a 1:36 resource teacher-student/classroom teacher ratio). Table 4 describes subsequent placement of Open Door graduates for the 1979-80 and 1980-81 school years. Column 2 describes type of placement (e.g., B-level SPED) and column 3 describes category of exceptionality (e.g., MH or "mentally handicapped"; BD or "behaviorally disordered").

Insert Figure 1 and Table 4 about here

Evaluation question No. 5. The total cost per year per child for the Open Door preschool programs is $3,919. Local school district costs for special education programs vary but average about $2,870 while the cost per child for regular education is currently $1,405. The present cost for institutionalization in New Mexico is approximately $30,000 per year. Thus (at current costs), a child attending 5 years of Open Door preschool and 12 years of special education would cost $54,035. If institutionalized for the same period, the cost would be $510,000; a savings of $455,965.

A child attending 5 years of Open Door preschool who enters and remains in regular education (rather than special education) would cost $36,455; a savings of $17,580. These findings compare favorably to those reported recently by Antley and Dubose (1981) for preschools for the handicapped in 9 states.

Discussion

The effects of intervention in terms of learner gains for each child (evaluation question number 1), mean gains for each child across developmental areas (evaluation question number 2), and mean gains for groups within each developmental area (evaluation question number 3) were reported as measured by Simeonsson and Wiegerink's efficiency index (Simeonsson &

Wiegerink, 1975; Simeonsson, 1982). Derivation of such information is important since it allows staff members to make critical future decisions regarding program maintenance/modification relative to such important factors as (a) intraindividual differences, (b) interindividual differences, and (c) differential assessment of instructional programs. An additional feature of the efficiency index approach is that its reliance upon the calculation of "developmental status" reflects the relationship between severity of handicap and developmental progress.

Accountability concerns were also addressed in the present evaluation effort. Through use of the efficiency index, it is possible to determine whether the individualized instructional programs are sufficiently effective given current levels of financial support. Evaluation questions 4 and 5 resulted in the findings that Open Door "graduates" are remaining in local public school programs--albeit self-contained special education classes for the most part--and that the cost for the special preschool programs in relation to public school regular and special education classes and state-operated institutions compares favorably to costs reported recently by Antley & Dubose (1981) for similar programs in 9 states.

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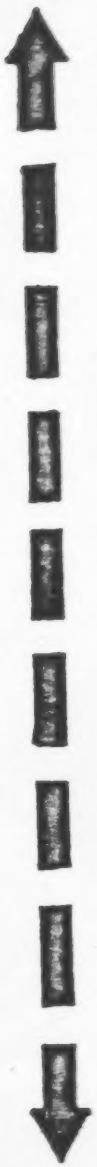
LEAST RESTRICTIVE LEARNING ENVIRONMENT

FULL SERVICE CONTINUUM



A. CHILD'S SPECIAL LEARNING NEEDS ARE SUCH THAT HE DOES NOT REQUIRE A BASIC MODIFICATION OF THE REGULAR CURRICULUM BUT CAN REMAIN FULL TIME IN THE REGULAR CLASSROOM WITH SUPPORT AND BACKUP.

B. CHILD'S SPECIAL LEARNING NEEDS ARE SUCH THAT HE DOES NOT REQUIRE A BASIC MODIFICATION OF THE REGULAR CURRICULUM BUT DOES NEED ADDITIONAL INTENSIVE, REMEDIAL ASSISTANCE OUTSIDE THE CLASSROOM.

C. CHILD'S SPECIAL LEARNING NEEDS ARE SUCH THAT THE CONTENT, METHODS, AND/OR PACING IN THE REGULAR CLASSROOM ARE INAPPROPRIATE AND MUST BE MODIFIED.

D. CHILD'S SPECIAL LEARNING NEEDS ARE SUCH THAT THE REGULAR CLASSROOM PROGRAM IS TOTALLY INAPPROPRIATE AND UNRESPONSIVE. AN INDIVIDUALIZED PROGRAM IS REQUIRED.

Figure 1: New Mexico's ABCD Program Continuum

Table 1

Efficiency Indexes per Child Within Two Selected Developmental Areas per Program

Child	Program	Instrument	Domain	CA (mo)	DA (mo)	Developmental Status index	Ideal gain (mo)	Actual gain (mo)	Efficiency index
1.	WISP-I (1980-81)	EIDP	S/E	11.5	8.5	.85	3.5	1.8	.61
2.				10.0	8.1	.70	2.0	2.9	2.06
1.			L	10.0	9.0	.90	3.5	0	0
2.				11.5	9.0	.78	2.5	5.0	3.19
3.	WISP-T (1980-81)	SEED	S/E	33.0	6.0	.18	7.0	0	0
4.				27.5	21.0	.76	7.0	6.0	1.12
5.				18.0	11.0	.61	7.0	10.0	2.32
6.				5.0	5.75	1.2	8.0	3.5	.38
7.				9.5	6.5	.68	9.0	19.0	3.09
8.				8.0	5.25	.66	7.0	10.0	2.18
9.				14.0	6.25	.45	6.0	0	0
3.			RL	33.0	3.0	.09	7.0	8.0	12.9
4.				27.5	11.0	.40	7.0	7.0	2.5
5.				18.0	8.0	.44	7.0	0	0
6.				5.0	6.0	.12	8.0	2.5	.26
7.				9.5	8.0	.84	9.0	5.0	.66
8.				8.0	8.0	1.0	7.0	4.0	.57
9.				14.0	6.0	.43	6.0	2.0	.76
10.	WISP-T (1981-82)	SEED	S/E	25.5	31.0	1.22	7.5	5.0	.53
11.				22.5	15.0	.20	7.0	9.0	1.94

Table 1 (contined)

Efficiency Indexes per Child Within Two Selected Developmental Areas per Program

Child	Program	Instrument	Domain	CA (mo)	DA (mo)	Developmental Status index	Ideal gain (mo)	Actual gain (mo)	Efficiency index
12.	WISP-T (1981-82)	SEED	S/E	20.5	23.0	1.1	12.5	9.0	.64
10.			RL	25.5	31.0	1.2	7.5	8.0	.88
11.				22.5	10.0	.44	7.0	6.0	1.93
12.				20.5	19.0	.93	12.5	13.0	1.12
13.	PEECH (1981-82)	SEED	FM	53.0	33.0	.62	6.0	9.0	2.41
14.				53.0	42.0	.79	6.0	3.0	.63
4.				49.0	27.0	.55	4.0	1.0	.45
15.		Brigance-IED	FM	50.0	38.0	.76	5.0	11.0	2.89
16.				38.0	28.0	.74	5.0	4.0	1.09
17.				36.5	15.0	.41	5.0	4.0	1.95
18.				56.0	19.0	.34	4.0	3.0	2.21
13.		SEED	RL	53.0	33.0	.62	6.0	3.0	.80
14.				53.0	33.0	.62	6.0	9.0	2.41
4.				49.0	24.0	.49	4.0	2.0	1.02
15.		Brigance-IED		50.0	30.0	.6	5.0	7.0	2.33
16.				30.0	24.0	.63	5.0	5.0	1.58
17.				36.5	8.0	.22	5.0	12.0	13.7

Table 2

Efficiency Indexes per Child Across all Developmental Areas

Child	Program	No. of Areas	Efficiency index
1.	WISP-I (1980-81)	6	.21
2.			2.56
3.	WISP-T (1980-81)	8	4.54
4.			1.29
5.			1.05
6.			.46
7.			1.15
8.			1.74
9.			.87
10.	WISP-T (1981-82)	8	1.10
11.			1.57
12.			1.20
13.	PEECH (1981-82)	8	1.25
14.		8	1.34
4.		8	.90
15.		6	2.01
16.		6	.96
17.		6	4.32
18.		6	1.47

Table 3

Efficiency Indexes for Group Gains Within Each Developmental Area

Program	Instrument	Domain	Efficiency Index
WISP-I (1980-81)	EIDP	P/FM	3.10
		C	1.88
		L	3.19
		S/E	1.29
		SC/F	1.96
		GM	1.92
WISP-T (1980-81)	SEED	S/E	1.29
		GM	.61
		FM	1.17
		AR	1.58
		RL	2.47
		E/L	1.72
		SH/F	1.68
		D/SH	2.15
WISP-T (1981-82)	SEED	SE	1.04
		GM	1.34
		FM	.87
		AR	1.69
		RL	1.31
		EL	1.27
		SH/F	1.41
		D/SH	1.40

Table 3 (continued)

Efficiency Indexes for Group Gains Within Each Developmental Area

Program	Instrument	Domain	Efficiency Index
PEECH (1981-82)	SEED	SE	2.12
		GM	.76
		FM	1.16
		AR	.94
		RL	1.41
		EL	2.35
		SH/F	.19
		D/SH	.32
	Brigance-IED	GM	1.11
		FM	2.03
		GK	1.25
		S/L	5.87
		F	3.01
		SH	1.62

Table 4

Subsequent Placements of 1979-80 and 1980-81 Open Door Graduates

Child	Type Program	Exceptionality	Year Placed
19.	D-Level SPED	MH	1980
20.	D-Level SPED	MH	1980
21.	D-Level SPED	MH	1980
22.	D-Level SPED	BD	1980
23.	D-Level SPED	HI	1980
24.	D-Level SPED	MH	1981
25.	D-Level SPED	MD	1981
26.	C-Level SPED	MH	1981
27.	B-Level SPED	MH	1981
28.	Kindergarten RED	MH	1981